

### **Remarks**

This response is made in response to the final Office action dated May 8, 2007, in light of the teleconference with the Examiner on July 3, 2007.

The claims were amended to correct grammatical and spelling errors. Specifically, the conjunction “and” was added to claim 14. In claims 29 and 30 the word “steal” was corrected to --steel--. No amendments were made to change the scope of the invention. The amendments therefore place the claims in better condition for allowance or appeal and do not require the Examiner to make a further search. Accordingly, the amendments should be entered even though the case has been finally rejected.

In item 4 of the Office action, the Examiner rejected claims 14-20, 22-23, 25, 27, and 29 as being unpatentable over JP 8-39214 in view of JP 2002-239690 under 35 USC § 103(a).

To summarize the rejection, the Examiner stated that JP 8-39214 taught an immersion nozzle with a refractory layer extending the length of the inside diameter of the nozzle. JP-2002-239690 teaches a nozzle with a swirl vane disposed therein. The Examiner then concluded that it would be obvious to one with ordinary skill in the art to dispose the swirl vane of JP-2002-239690 in JP 8-39214. In addition, in the response to the arguments (i.e. item 7 of the Office action), the Examiner attempted to minimize the feature in the claim that the refractory layer be disposed upstream the swirl vane by arguing that the specification showed no particular benefit for having the refractory layer disposed upstream the swirl vane.

As discussed with the Examiner in the July 3, 2007, teleconference, page 5, second and third full paragraphs of the specification explain the advantage of having the swirl vane disposed upstream the swirl vane. The advantages are that the refractory layer reacts with impurities in the flow. The swirl vane tends to force the impurities to the center of the flow. Therefore, it is advantageous to dispose the refractory layer upstream the swirl vane so that it is possible for the impurities to react with the refractory wall before they are forced away from the wall into the center by the swirl vane. Because this secondary condition is explicit in the specification, it should not be

necessary to present it in the form of Declaration under Rule 1.132 as suggested by the Examiner's Response to Arguments.

In the teleconference with the Examiner, the Examiner said that he would reconsider the claims in light of the advantages discussed on page 5 of the specification. The Examiner cautioned that, if the prior art (i.e. JP 2002-239690) taught or suggest a refractory layer upstream of the swirl vane or that the entire nozzle was made of a refractory material, then Applicant's argument would be weakened. The Examiner then explained where a computer-generated English translation of the entire specification could be obtained.

In addition to the undersigned attorney reviewing the English translation of the specification, Applicants themselves, who are Japanese, reviewed the contents of JP 2002-239690 in light of the Examiner's request.

No teaching or suggestion of a refractory layer or material was found in the review of JP 2002-239690.

Accordingly, Applicants still believes that one with ordinary skill in the art reading JP 08-039214 would not be taught to place a refractory layer in a nozzle upstream of the swirl vane. One would merely be taught to place a swirl vane anywhere (i.e. upstream or downstream) in a nozzle having a refractory layer.

To assume that one with ordinary skill would know to dispose a refractory layer upstream the swirl vane, is an impermissible use of hindsight in reconstructing the invention. Not until various locations (i.e. upstream and downstream) relative to the swirl vane were tested would one with ordinary skill in the art realize that the refractory layer needed to be upstream of the swirl vane. This realization is the invention described in claim 14 and should not be discounted by the Examiner.

Because claims 15-31 ultimately depend on claim 14, they are believed to be patentable for the same reasons as claim 14.

Applicants: Morikawa et al.  
Application No.: 10/569,006  
Examiner: Kerns, Kevin P.

**Conclusion**

In light of the foregoing remarks, this application is now in condition for allowance and early passage of this case to issue is respectfully requested. If any questions remain regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

No fee is believed due. However, please charge any required fee (or credit any overpayments of fees) to the Deposit Account of the undersigned, Account No. 500601 (Docket No. 7620-X06-005).

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Loren D. Pearson". The signature is fluid and cursive, with the first name "Loren" and last name "Pearson" clearly distinguishable.

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